

CAPT. FRANK FOSTER, GLOUCESTER, MASS.--INTERVIEWED
BY WILLIAM WAKEHAM, RICHARD RATHEUN AND HUGH
M. SMITH, NOVEMBER 15, 1893.

47 years old. Has been mackerel fishing since he was 16 years old. Master of vessel for 22 years. Is interested in only one vessel at present--Sch. "Minerva"--of Gloucester. Has built 5 or 6 vessels for this fishery.

Q. Do different size mackerel go in the same school as a rule?

There are some schools in which they will not vary an inch, other schools will vary from as long as your finger to 16 or 18 inches.

Q. Do fish run together mostly of one size and grow up together?

Some schools remain together, but of course there are cases where there are all sizes from the smallest to the largest.

Q. Is it not a difficult matter to tell how fast the fish grow?

They go away in the fall and come back in the spring. After leaving here in the fall they do not grow any until they come back in the spring. They

grow when they are on the coast, for the reason that they do their feeding then. When they return in the spring there is not a particle of fat on them. On holding them up you can see the light of day through them.

Q. Were many small mackerel seen last spring, and would it not have been better not to have touched those mackerel?

I think all they landed would not make a drop in a bucket. Only 3 or 4 vessels got any at all. Those were mackerel which had spawned the year before, and $\frac{3}{4}$ of them would go right through the meshes of the net.

Q. How large do they grow in a year?

About an inch. Mackerel grow rapidly only to a certain size, I suppose somewhere from 15 to 16 inches long.

Q. What is the largest mackerel you have ever seen?

I think 23 inches. I think we got one of that size this spring, which was a very large mackerel. Mr. Church got 400 barrels of very large fish one time in his steamer. This was fishing about Block Island. Those large fish are there every year. They would lay right across a barrel. Would pack

90 to a barrel of 200 pounds. Late in the year were very fat. Have not seen any big fish for 2 years. In 1836 we were out there and got 100 barrels in one morning.

Q. How large were they?

I do not know exactly. Should say from 14 to 18 or 19 inches long. Packed in barrel took 160 to 180 for No. 1, 130 for extras.

Q. How did you catch them?

In the seine. It was in the last of October. They showed up better then than at any other time.

Q. What is the average size of mackerel taken with the purse seine? What will they weigh on an average?

That is a pretty hard question to answer.

I should say they would measure between six inches-- little tinker mackerel--and 14 inch mackerel. We catch more No. 1's 2's and 3's than we do larger size fish.

Q. What is the smallest size mackerel seen schooling in the fall, after they are hatched in the spring?

5 $\frac{1}{2}$ or 6 inches. Could get 132 in a common water pan, generally would not fill it.

Q. What was the size of those small mackerel

last spring?

They were from 7 to 9 inches, possibly, on an average.

Q. Were those year old mackerel?

Yes, they were year old.

Q. Do you find as many large mackerel now as you used to?

More large mackerel this fall than there has been since I have been going fishing. The general percentage this year is large mackerel, altogether.

Q. How far south have they taken mackerel this year?

Just as far as I have gone. (Capt. Adams has record of farthest south taken by Capt. Foster).

Q. When fish are schooling do you always find scattering fish on the surface?

Yes, indeed, always find scattering fish. Will always see them on the coast anywhere. Light vessels catch these scattering fish.

Q. Do you follow schools any distance?

Oh, no; but would follow a body of fish. Would follow them along, perhaps 10 miles from the shore. Would follow them clear to the south as far as we go. Do not follow any one school that we know of.

Q. How far have you followed a body of fish?

We follow them from as far south as we find them to as far to the north as we go. They go to the head of the Bay of Fundy. Fish which approach the coast of New Jersey go up the bay and into the Gulf of St. Lawrence. Fish on this coast do not go into the Bay of St. Lawrence.

Q. You find, possibly, that the fish which go into the Gulf of St. Lawrence might approach the coast there near the mouth of the Gulf?

Yes. A little farther to the north. We have no proof of this more than that we do not find them anywhere else.

Q. Are mackerel thin when first seen?

Yes, indeed, not a particle of fat on them.

Q. When are fish first seen off the coast of Nova Scotia generally?

The 5th of May is the earliest I know of.

They are then fat.

Q. They have not begun to fatten up at the south?

No; never find any mackerel at the south with any fat on them in the spring. Cannot tell the males from the females when in the water.

Q. How far north have you fished for mack-

erely?

Been in the Gulf of St. Lawrence. Went up as far as the Magdalen Isds., and up the Miramichi.

Q. How early can you fish up there successfully?

Well, I do not know. I never was there early. Never attempted to go there early. Do not generally go around north of Cape Breton in the spring. Capt. Sol Jacobs got 200 barrels at Cape North in June. Last spring there were 30 sails or more around near Cape Breton in the Gulf of St. Lawrence.

Q. Has there been any change in the fish, as to the size or movements of the schools?

Well, no, "othing more than some years they are more plentiful than others.

Q. You do not see any great difference?

No, indeed.

Q. That is to say, you might now find fish schooling in the same way; schools of the same size, and fish of the same size, that you did 20 or 30 years ago?

Yes, indeed. I will illustrate this by one instance; We were south; plenty of fish. All at once they disappeared and we never knew where they went to. We never found them again. Have searched

the coast for several months and never found anything; until the first thing we knew, they came rushing on the coast, all along from Monhegan to Cape Cod.

Q. If these schools of fish that come on to the coasts of Virginia and New Jersey do not go into the Gulf of St. Lawrence, where do they go?

They come on this coast last. They came on this coast this summer, and ^{went} as far as above Grand Manan, more than they have known for many years. We do not where they went to. Good schools of mackerel around Cape Cod, off Block Island and Vineyard Haven. They staid through the whole summer. Large schools. We went up there quite late and got 200 barrels. Raised them anywhere. Leave Cape Cod first of November.

Q. There is still some fishing there?

Oh yes, there is fish always, but they do not seem to be in schools at this season. They catch them now in traps and in nets at Cape Cod. No sails on the coast now. They catch them in traps until Christmas; that is, scattering fish, in small quantities. There are vessels yet on the Nova Scotia coast. Mackerel coming out of the bay always follow up along the Nova Scotia coast.

Q. What time of year is that?

● About this season(Nov. 15). There would be no fish in the Bay of Fundy at this season, that I know of.

Q. What seems to become of that school of fish they are now catching on the Nova Scotia shore?

When the season comes for them to come in on the coast, they come in. Think they go into the Gulf Stream, that is, all those that strike the other side of Cape Sable, but our fish that strike up along this coast come in on the coast this side and stay here.

Q. Are those fish going out through the Straits of Canso, going out and disappearing, in schools?

Yes.

Q. Do the fish that go up by New Jersey pass down by New Jersey again?

Oh, yes.

Q. How far south is the fishery carried in the fall?

I never knew them to carry it farther than Block Island; I suppose principally on account of the weather. It is on account of the weather that they never find them again after they get that far.

Q. Do you find as large schools in the fall as in the spring?

Yes, frequently larger.

Q. Do you know of persons who have seen the fish south of Block Island in the fall?

Yes, indeed, one of my men who has been with me for two years, goes south every winter. He went out on the "City of Macon", I think, and he said the likes he never saw before in the way of mackerel. They seemed to be right in a body. About 55 miles S.S.W. from Block Island. We could not get there this fall.

Q. They used to fish off the Vineyard?

Yes, indeed, but not very recently.

Q. Do you ever find mackerel during the winter?

There are none found during the winter after December that I know of. I do not think small mackerel go south as far as the big ones. Never knew of mackerel being found in the stomachs of other fishes during the winter. In the winter these fish go off in the edge of the Gulf Stream, in warm water. Stay on the bottom. Will tell you my reasons for thinking so. There are plenty of vessels go across the Gulf Stream, and often men go who

have been fishing all their lives. If they saw a school of mackerel from the deck, they would report it. Hundreds of vessels cross that stream, and do not see them.

Q. Do the schools strike the upper parts of the coast with regularity from year to year?

That is a pretty hard question to answer. It is a difficult matter to strike those fish exactly when they strike the coast. Might have bad weather for a week and not see any. We expect to meet them when they first come out of the Gulf, somewhere along about the first of March. Mackerel occur anywhere about the coast at certain seasons.

Q. There is no particular place where they never occur?

None that I know of.

Q. You may find them around Georges?

Oh, yes.

Q. Which is the biggest mackerel region on our coast, including Canada?

I should say on our coast that the Bay of Fundy has the greatest quantity; at any time. When a large body of fish come from the south they generally go to the Bay of Fundy.

Q. How far off shore have you seen mackerel?

It is always inside of the Gulf Stream. Never saw them off more than 60 miles.

Q. What do you consider the Bay of Fundy, that part north of Grand Manon?

I call anything the Bay of Fundy inside of the Seal Islands and Matinicus.

Q. Would you expect to find mackerel 60 miles off shore in the Bay of Fundy?

Oh, yes. The year 1882 was the greatest year we ever knew in the Bay of Fundy.

Q. How far from shore is the best fishing?

It is anywhere.

Q. You do not know anything about the temperature of the water?

No, sir.

Q. Do the schools go inshore at all?

Yes, indeed; there has been a very good fishery this year close in.

Q. Is that the same school of fish which have gone in?

Yes, indeed, but there is always more or less scattering fish. Never knew a season but what there is more or less scattering fish along shore.

Q. Do you find these same small pods off

shore too?

Oh, eyes, very frequently.

Q. Those are not worth purse seining?

Would be if you could catch them. Have set all day long and only got 20 barrels of fish.

Q. Are the movements of the schools affected in any way by predaceous fish?

I have seen mackerel paralyzed so with fish that you could go right up to them and pull them into the boat.

Q. What were the fish?

They were albacore, from 3¹/₂ to 5 feet in length.

Q. What is the movement of mackerel in the school; do they circle much?

Sometimes they circle. Sometimes you will see a dozen schools at once, sometimes 20 and 50 schools all going around like a wheel. Not like menhaden exactly.

Q. What do the mackerel feed upon?

Several things. We call it red feed or red seed that is in the water. It is alive. They also feed on live bait, little fish. Have seen fish in mackerel that length(length of finger).

Q. Is there any difference at different

times of the year? Do they feed on this red feed at all times of the year?

There are plenty of times in the year you will not find any of this red feed in the mackerel.

Q. Is there any particular time of the year that they get the red feed when they are going up the coast in the spring?

Well, whenever they find it. It is not general all along the coast.

Q. Do mackerel feed at the surface?

Yes, I think so. They school for nothing but that.

Q. Do mackerel feed at all seasons? Do they feed at spawning season?

I suppose they do.

Q. The question of burning their stomachs has reference to this red feed?

Yes, it is the red feed.

Q. How long does it take to burn the stomachs?^{out}

Sometimes could not keep them on deck more than 5 or 6 hours. Could not bring them in fresh very well; not without ice. It would affect the flesh of the fish.

Q. You do not find this food at any particular place or season, but may find it at any time

during the year?

Yes, at any time. The red feed goes in schools.

Find it down south where we first strike the mackerel, and as far north as we have gone. Plenty of it in the Bay of Fundy.

Q. Where do the mackerel spawn?

In my judgment they spawn anywhere from the Delaware Breakwater to the head of the Bay of Fundy, on this coast, and in the Gulf of St. Lawrence. They spawn any time from the 15th of May until the 1st of July, and sometimes later than that.

Q. Have you ever seen the spawn running from the mackerel in the water?

I never did.

Q. Do you know whether they spawn during the day or night?

No, I do not.

Q. Do you know anything about the habits of the mackerel when spawning or immediately after?

I find that the month of June is the dullest season there is. They may be below the surface.

Q. That would happen during the months of May and June?

Yes.

Q. How rapidly do they fatten up after spawn-

ing?

Very rapidly. After the first of July and from that to the middle of August, they get about all the fat on them then for the year, and then they remain fat until they leave our coast. Not as good late as a little earlier.

Q. Did you ever find any logy mackerel?

No, I never did. Once in a while find them without a particle of food in them. Do not find many in schools that are sick. Never see dead mackerel on the surface. They would sink.

Q. Do lamprey eels ever touch those mackerel?

No, I never saw any at the surface.

Q. What fishes feed on the mackerel?

A great many--whales, sharks, porpoise, dogfish, albacore and bonito. Blue-fish are the worst fish in the world for mackerel. Will bite them for mischief.

Have mackerel decreased or increased in abundance within the last 20, 30 or 40 years?

That is a pretty hard question to answer. They have been scarce a great many years ago, and then they will be very abundant, and then they will decrease again so that we will not have but a few. There are as many on this coast this year as I have

seen since I have been fishing.

Q. You do not think there has been a general decrease?

No, sir. I think we are liable to see as many in 1 or 2 years from now as we ever see.

Q. Then you would not consider that the extensive fishing which is going on has affected their abundance?

No, sir; not materially.

Q. Are there any years when you see the mackerel mostly small?

Yes, nearly all small some years.

Q. What does that mean? Are they all small the next year?

Some years small mackerel. In 1833 all small. In 1834 No. 3's, in great abundance; the biggest catch we have ever had since purse seines have been in use. In 1835 we did not know where they went to. Was not so many then as there was the year before.

Q. Is there any form of fishing appliance which is used in catching mackerel that is taking too many fish or destroying them in any way?

No, sir, I do not think of anything that de-

stroys fish to any extent.

Q. Do you think that the purse seine has any effect, is too destructive or not? Either in the quantity caught, or in breaking up the schools and frightening them from our coast?

No, sir, I do not think it is too destructive a method of fishing. It would break up the fish more than hook and line, but do not think the purse seine breaks up the fish to a great extent. All we catch does not amount to a drop in a bucket of water compared with what there is in the ocean. In the years 1883 and 1884 there were a great many thrown overboard. Heaved over some myself. Have been sorry ever since. It was in the fall fishery.

Q. Do you think there should be any regulations regarding purse seine fishery?

No, I should not regulate itⁱⁿ any way. It will regulate itself. Think the demand will regulate the extent of the fishery. Think they do not catch enough to supply the demand, even with all the facilities they have. Would not prohibit fishing with purse seines on Canada shore. Does not favor the close season. Thinks the fishermen made a great mistake in having it. Does not think the fish need to be protected during the spawning sea-

son. What they catch would not amount to much, comparatively speaking. Does not think the close season of much benefit.

Q. There is no particular reason why you would prohibit purse seining for any season?

Well, we might prohibit it altogether. Might make mackerel more plenty. But now if you are going to catch any you have to use the purse seine. Caught more fish in the old days with hook and line than now, but had more men employed. They are in-shore now just the same as they ever were.

Q. What is the least depth of water in which you can use the purse seine?

If the water is smooth, can use it in 10 feet. Depends somewhat on the bottom. If smooth, 4 fathoms; if rough, 16 or 17 fathoms. Think we would all have to give up the business on this coast if we did not use the purse seine, for the reason that has been years when fish were plenty and years when we cannot make them bite, no matter how nice the bait.

Q. Where was the great region for jigging in the old days?

Along the coast and the Bay of Chaleur.

Were there many vessels jigging this summer?

I think 5 went to the Gulf of St. Lawrence.

Think there are as many mackerel this year as

there has been at any time for the past 20 years or more. There are mackerel on this coast that we know nothing about. A great many little fish that we do not see. Do not see all the fish that pass along the coast. Some years when the season is cool or stormy large quantities of fish will pass by below the surface.

Q. Have the fishermen done well in the Gulf of St. Lawrence the last few years?

No, they have done slim.

Q. Did you see a large body of mackerel going north this year?

The largest I ever saw.

Q. If purse seining were prohibited in the Gulf would it affect you any?

It would not affect me at all, because I would not go there. Ever since he can remember there has been years when fish were plenty and years when they were very scarce. There is a large quantity of fish come on this shore this year that are spawning fish. There will be a large quantity of small fish coming from those bog ones, and of course they will come here and grow up here, as they were spawned on this shore. This large body of fish is some-

where, and we shall find them before many years. The year 1882 was a very successful one for me, and it was for a great many, and they were about all large fish. Did not see small mackerel that year. The next year was a great tinker year, and the next year, 1884, was the greatest year we had ever had since purse seining has been in use. Thinks they will be the same again, but they have taken another course. Have not found them. These large fish that have come on the shore this year must spawn somewhere, and I think we shall see the effects of it before many years.

Q. Do any quantity go into the Gulf through the Gulf of Canso?

A. I think a great many, probably.

Q. What was the advantage in getting this close season in the spring, which has continued during five years.

A. Nothing; it was a great mistake and nothing else.

Q. What did Mr. Whidden suppose would be the result of the close season?

A. He supposed vessels would have to go into some other business during certain seasons. It was pro-

tection to the fisheries; that was his idea. Close season in the southern waters should be later than the first of June. Mackerel have not done spawning until the last of June, and often into July. All the fish they catch at the south will not hurt anybody. I think there is too much legislation now against the fishermen.

Q. Are you acquainted with the menhaden fishery?

Well, I have caught more or less of them ever since they have been going. Do not know where they spawn. Do not think menhaden spawn anywhere this side of New York. The menhaden fishery is only for the people who are concerned in it. Do not want them for bait. Have used them in years past for bait, because it was the best bait we could get.

Q. What bait do you carry on board mackerel vessels now?

Blue backs, we call them. Kyacks are not the same color as the alewife. Have 18 barrels now of kyacks. They are salted. Knows there are two species of alewives.

Fresh mackerel are worth more than salt mack-

erel, as a general thing.

Q. Was there much shore fishery for mackerel?

No, very little. They go off Block Island sometimes. We used to fish in 33 fathoms, and would get plenty of fish. Sol Jacobs started from the fleet once; went 25 miles off shore in 60 fathoms, and came upon a body of fish; any quantity of them. He lay there until the next night, and 8 of us went out there, and went aboard his boat. He said to me "The water is alive with fish. I am going to the Cape Shore, but will stop one more night. We worked all night long. All got more or less mackerel, but nothing to what we would have got if we could have kept them in our seines. It was not on account of their being too small, but they would go down before we could get the purse together.

Q. Dont you fish at night?

Oh, yes.

Q. Why dont you take them ~~away~~ then?

That is something I cannot tell you. They would go right down and come up on the other side of our seine, and away they would go, 200 or 300 barrels in a school, but away they would go. Would

Q. Which is the best vessel fishery on this

have them in the seine one minute, and the next minute they would not be there. Thinks the steam seine boat an advantage. However, as quick as you put a light aloft you scare the fish, that is mackerel. And should you take it down and meet with an accident you would be liable to be tried for your life.

Q. What is the advantage of having steam, is it to approach the schools more quickly?

Yes. And you can also purse the seine quicker.

Q. Is the steam launch obliged to have a light up aloft?

Yes.

Q. Do mackerel school better in the dark or in the moonlight?

You cannot get them at all in the moonlight. A school of fish on a dark night with plenty of fire show just as white as a piece of marble.

Q. Is the fleet of mackerel fishermen likely to increase?

Not unless the business increases. There is nothing that has happened this year that would cause them to increase next year. If mackerel should come on the coast very abundantly the fleet would increase.

Q. Which is the best vessel fishery on this

part of the coast? Which is supposed to pay the best?

Nothing will pay better than mackerel, when they are here.

1893.

Aged 54 years. Been engaged in mackerel fishing since captain for 27 years. Has fished for mackerel before that. Master of schooner George F. Johnson of Gloucester.

Mackerel are of different sizes in the same schools, but often find schools all the same size. They will range in length from 17 inches down to 3 inches. Sometimes the larger fish would precede. The largest mackerel that school are from 14 to 18 inches. Does not remember taking any that were 20 inches in length. Might be a very few scattering ones. Smallest mackerel he ever saw schooling were probably about 4 inches in length. They were spawners the same year. They were from 5 to 6 inches long; some probably not so long as that. That is, fish hatched in the spring would attain in the fall the size of 5 or 6 inches.

Thinks large mackerel are as abundant as they used to be, in proportion to the amount taken. Does not know of any decrease in proportional size.

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WILLIAM WAKEHAM, RICHARD RATHBUN AND

HUGH M. SMITH, NOVEMBER 15,

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Thinks large mackerel are as abundant as they used to be, in proportion to the amount taken. Does not know of any decrease in proportional size.

Has not been south mackerel fishing for the last 6 years. Stopped going south when the close season began. Has taken mackerel as far south as the latitude of Cape Henry. These early fish in the spring, as a general thing, are all headed north. These fish are most all schooling, some scattering fish. The farthest north he has caught any fish in the spring was Point Miscow. Could not say how far north the fish that start in off Cape Henry go. They have been trying to find this out for a number of years. Some go into the Gulf of St. Lawrence.

Q. You do not think that they stop at the Bay of Fundy, and other schools coming in further north are the ones which go into the Gulf?

It is owing to the season. Some go off shore and strike down by Cape Sable.

When he first sees them in the spring they are very poor. They are not all in spawning condition. Has picked out a few mackerel in the spring as fat as in August, but only once in a while one.

Has never been able to trace a school of mackerel any distance with any surety. Thinks they do sometimes.

The farthest north he has fished was off Gaspe. Got fish there about the first of July.

Cannot say the fish are any different from what they used to be in size. They run about the same as when he first commenced to catch them with seines; the movements of the schools are the same; and the condition of the fish is the same.

The fish do not leave the coast very suddenly. Owing a good deal to the weather. If cold will leave quicker. A heavy cold wind will start them sometimes, especially a northeast gale. Some scattering mackerel left on the coast after the schools have gone. Take these scattering ones with hook and line, and with nets. On leaving the coast the fish generally take a southerly route. Never followed them farther south in the fall than Block Island. Some seasons they go off shore when leaving. Fish that come out of the Gulf of St. Lawrence follow up to Cape Sable, and then go south outside of Georges Bank. The fish which are on the coast of Maine go down close to shore as a general thing. Does not know of any one who has followed mackerel south of Block Island in the fall. Cease following them there because the weather gets bad. Does not think they travel south in the fall any faster than they move north in the spring. Does not hear of their catching them at Cape Sable.

not see much difference. They make about 20 miles in 24 hours, both in the spring and in the fall.

Has heard of scattering mackerel being as late as the 25th of December--Christmas time--but after that do not see any mackerel at all.

Has heard of mackerel being caught in January on trawls, and on hook and line, on Jeffreys Bank; on the middle of the Bank. Have seen mackerel caught down off New Brunswick in herring nets in February; probably there might be half a barrel or so among a hundred barrels of herring, more or less. No. 2 mackerel. They were caught at Beaver harbor, Passamaquody Bay. These winter mackerel would be about 11 inches in length. Would be very poor.

Q. When mackerel strike in at Cape Henry, how long before they get to Cape Cod or Block Island?

Well, we catch them there sometimes about the 10th of April. As a general thing about the middle or last of May, we get them at Block Island. Has caught mackerel off the coast of Nova Scotia about the 20th of May. Get them on the coast of Nova Scotia as early as at Block Island. That would indicate that they might strike in from off shore.

Mackerel strike in at Cape Sable and two days after we hear of their catching them at Canso in

the nets. Mackerel that go in at Cape Sable move right along the shore. Others strike in directly at Canso. On the Cape Sable shore mackerel strike about the 1st of June.

Does not know of any part of the coast which they keep away from.

They are more plentiful in the Bay of Fundy as a rule than anywhere else on the coast. Calls it the Bay of Fundy anywhere inside of a line drawn from Cape Sable to Matinicus. That is the best fishing grounds on our shore. More plentiful in the Bay of Fundy than in the Gulf of St. Lawrence. Some years when they are so plentiful in the Bay of Fundy they are apt to be scarce in the Gulf of St. Lawrence; not always the case. They were the most plentiful in the Bay of Fundy in 1884, and were just as plentiful in the Gulf of St. Lawrence. They were small sized fish.

Found mackerel the most plentiful in the Gulf, in 1886; thinks it was between North Cape and Escuminac. That is the only season he ever found good fishing in the Gulf of St. Lawrence. Vessels used to do better hooking than seining there. Do not catch as many fish there now as they did then.

Does not think that sharks drive mackerel. Does not

Have not for the last few years. During the last 4 years have not caught as much fish as formerly. Seem to catch the most fish as they are going into the Gulf, and coming out. Does not know any particular reason why they should not be as abundant there.

Mackerel generally follow the feed. Where there is the best feeding ground they will be the most plentiful.

The farthest off shore he ever found them was about 130 miles.

Has found mackerel in July on Georges Bank. They were working to the northward. Has never fished much on Georges in the fall.

Has seen mackerel in large schools right close in shore on the rocks, or on the beaches.

Thinks a great many different fish prey upon mackerel. About all large fish prey upon them. They often frighten the schools away. Blue fish will drive mackerel off the coast. Albacore are as bad as blue fish. Could not say whether whales trouble them or not; but they are found among the schools. These predaceous fish drive the mackerel away from our coast; turn them from their course. Does not think that sharks drive mackerel. Dog-fish

will drive them. Always expect to find mackerel when a large body of blue fish comes on the coast. They clear them out. Never see blue-fish farther north or east than the coast of Maine. No mackerel caught on this coast last fall.

(Dr. Wakeham stated that at Grand Manan blue-fish been seen, some years ago, about 1888. The fishermen coming home from the Banks reported schools of blue-fish about half way between Matinius and Cape Sable. That was the year that the menhaden reappeared on the coast of Maine, after an absence of 10 years).

Mackerel feed on red seed, or sayenne, on small shrimp, and on small fish, about $\frac{3}{4}$ in. long. Has seen jelly fish in the stomachs when dressing them. Never noticed any particular kind of feed at one time of the year and other kinds at another time. Some years will not see much red seed, and at those times do not see large schools of fish on shore. Seems to be the principal thing that the fish feed upon. Has seen it as far as he has been north. Has seen it up as far as the Gulf of St. Lawrence. Herring feed on it also. Have seen herring full of it off Newfoundland in the winter. When mackerel are seen schooling they are feeding

at the surface. Does not think they feed so much in the spring when making their passage.

It is the red feed that burns their stomachs. Does not know of any other kind that does. It prevents their being kept fresh. Cannot keep them very long without ice. Used to lose a good many. Now we have pockets that we turn them into, so we do not lose any at all. Pockets are rigged on the side of vessel, made of heavy twine. Turn the fish out of the seine into these pockets. All vessels carry these pockets. Get fish in warm weather, put them on deck, and they would get soft before we could dress them. Some fish die in the pockets; those that have been injured. They would live long enough so as to dress a large school.

The red food has no particular distribution. Find it more or less everywhere.

Mackerel spawn as soon as they go in the bay (Gulf of St. Lawrence) as a general thing. Some spawn will be ripe when they first catch fish in April or May. Will find them ripe at Block Island by the time they catch them there. Never catch many fish on the coast of Maine with spawn in them. Most of them spawn before they get there. Spawn

along Flock Island, Nantucket, Georges and Cape Cod. They find spawning fish in the Gulf of St. Lawrence the last of June. They catch mackerel with spawn in them in the middle of July in the Gulf of St. Lawrence. Could not say how far off shore they spawn. Thinks they spawn on Georges. Do not know whether they spawn at the surface or not; but thinks they spawn at the bottom. Does not know whether they spawn during the day or night. They disappear during the spawning season. They disappear the last of June, and it is the middle or 10 of July before they come up plentiful again. Gets only scattering fish during that time.

The fish in the spring run before spawning are very poor. They begin to fatten up some by the middle or last of July.

Find very few sick mackerel. Logy mackerel are very poor, sick fish. Never saw dead mackerel at the surface. They seem to be very dull about the spawning time. Take mackerel in the spring on the Nova Scotia shore, generally catch about every school they set for, because they appear to be less active then. The first schools on the Cape Shore are nearly all large and full of spawn. Noth-

ing smaller than 11 inch fish.

Does not think there has been any decrease in the abundance of mackerel. As many as when he began fishing. Some seasons more plentiful than others. Large catch of fish in 1884. Caught over 4,000 barrels that year. For 5 or 6 years before had not caught over 200 barrels. Since then has not caught so many, although he has made good catches. This summer we supposed there were no fish on the coast, and they struck in here all along the coast, and some got good catches, although I did not happen to be one of them. They struck in October 1, off Matinicus, then all along the coast of Massachusetts, and large catches were made; lasted about three weeks.

Does not think the purse seine has done any harm. Years ago when I was a youngster used to be 700 or 800 sails on the coast all fishing with hook and line. Purse seine has no effect in breaking up or scattering schools. Does not think the purse seine fishery should be regulated in any way. Does not think it is necessary.

Does not think the close season of any benefit to the mackerel fishery. They have been no more plentiful since the close season than they were be-

fore. Would be no object in prohibiting purse seine fishing prior to June 1. Many of these fish are sold fresh. Certain market for poor fish. Get fair prices for them. Do not get the biggest prices in the spring. Prices average all the way from \$10 to \$15 for these poor fish. South mackerel fishery would pay first rate if they did not get too many vessels down there. Does not think there is any great advantage in starting out early, not before April at least. Is in favor of keeping up the early mackerel fishery. Has followed it up about twelve years. Made it pay on an average.

Does not think mackerel need any protection.

Thinks they spawn more some seasons than others.

Does not think there is any region where purse seining should be prohibited. Does not think purse seining hurts the hook and line fishing along shore.

More mackerel destroyed by predaceous fishes than by fishing. Total amount of mackerel taken only a small proportion of the mackerel they see.

Purse seine fishing in the Gulf of St. Lawrence not very profitable. Did very well there one year. Caught two trips. Thinks it was in 1883. Does not

think there would be much opposition to the prohibition of purse seining in the Gulf of St. Lawrence. The Gulf used to be a famous fishing ground with hook and line.

Has not fished much with hook and line. If vessels would not take any seines now, and would fish with hook and line as they used to do in old times, would do just as well as they ever did. Hook and line fishing would well on our coast. Never saw fish bite any better at Block Island than they did this summer.

No difference in the quality of the fish, between the purse and the hook and line fish, since they got the pockets over the sides of the vessels for holding the mackerel alive.

Purse seine fishermen would not want to go back to the hook and line fishery. Thinks about $7/8$ of the mackerel taken by U. S. fishermen are caught with purse seine. Fish caught on the coast of Nova Scotia, etc., not included in this proportion. Fish are caught more cheaply with the purse seine than by other methods, else it would not be kept up. But it is a more costly outfit. Vessels get more fish with the purse seine.

Seine will last, if well taken care of, 4 or 5

years. Average cost of seine \$700. Purse seine now is a great deal longer than when he first began to use them. The first seine he had was 140 fathoms long and 500 meshes deep. Now they have 240 fathoms long and 1,000 meshes deep; about 17 fathoms in depth. Used $1\frac{7}{8}$ inch mesh in purse seines. Never larger than 2 in. Size of mesh in gill net $1\frac{3}{4}$ to 2 in. stretched.

Does not know much about the steam launch.

Says Capt. Harty used one this summer. Does not think he got enough more fish in his purse seine to pay the extra expense. It requires the same crew. Boat great deal heavier to tow. Risk of losing greater. Cost about \$2,700. \$250. for row boat.

There is not much feeling on the part of the shore fishermen against the purse seine. Does not think the purse seine frightens the fish away from the shore. Might for an hour or so, but not materially. Fear as they start to go south.

Thinks pounds the most destructive things in use. Grow very fast in the summer season.

Thinks there is a certain school of mackerel that strike on to the coast of Nova Scotia and go into the Gulf. Does not think purse seines would practically affect their abundance after they get

into the Gulf. Purse seines are used on our coast more than anywhere, and does not see that they have driven the mackerel away any. That goes to prove that they will have no effect on them in the Gulf of St. Lawrence.

As a general thing mackerel are by themselves; no other fish with them. Have caught "blue-backs" with them. They are mixed with mackerel more than any other species. Also find some shad, but very few. Do not catch blue-fish with mackerel very often. Mackerel clear out when blue-fish put in an appearance. No blue-fish around when they first see mackerel in the south.

Thinks mackerel must lay off on the edge of the Gulf Stream, but has spoken square rigged vessels in the spring that said they saw fish on the other side of the Gulf Stream in April.

Mackerel are at their best in September. Begin to get poor as they start to go south. Does not think they grow much during the winter. Mackerel grow very fast in the summer season, until they get up to a certain size, about 11 or 12 inches. Does not think they feed much in winter.

Thinks some seasons there are lots of mackerel

going through the Gut of Canso, late schools. Has known them to come out that way. Has seen them schooling in the Straits.

(Dr. Wakeham has known Leandre Michel, at Meccatina, to catch over 50 barrels; were caught with drag seine, herring seine, in September. Others have been taken at Bon Esperance at the end of the Straits of Belle Isle. Does not know of mackerel being taken in the Straits).

Has known of mackerel being taken in White(?) Bay, on the northeast coast of Newfoundland. Thinks they must have been going through the Straits of Belle Isle, as he has never known of their passing by St. Johns, on the southern coast. But mackerel have been caught in Fortune Bay.

(Dr. Wakeham thinks they are not taking mackerel at Meccatina.)

Capt. Henry Smith took 100 barrels or more mackerel on a hook about St. Georges Bay, the southwest corner of Newfoundland, about 15 years ago, in the last of October, in a snow storm.

Has seen mackerel fish when fishing hardly over in the south of Delaware. Mostly off Cape May, along about the first of May.